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Organizational sensemaking: A systematic review and a co-evolutionary model

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ABSTRACT

Over the last 30 years, a massive body of literature has been generated for explaining how individuals and groups make/give sense to their experiences in organizations. Reviews on sensemaking have been produced, but they did not update the original Weickian sensemaking model – strongly based on the Darwinian principles – according to the occurred developments. To fill this gap, a Systematic Literature Review (SLR) of 402 contributions on organizational sensemaking has been conducted; sample articles have been interpreted according to a renewed evolutionary lens: co-evolution. This study offers an updated and holistic revisitation of the original sensemaking model and proposes a *co-evolutionary framework of organizational sensemaking*. In particular, it identifies four new and two evolved properties that compose the sensemaking phenomena, emotional schemata as the new unit of analysis for sensemaking studies, and specifies the individual and collective sensemaking processes.

1. Introduction

Sensemaking, whose founder and theorist is Karl Weick (1979; 1988; 1995; 2009), is considered as the process through which people assign meaning to issues or events that cause the current state of the world to be different from the expected state. Since its first clear conceptualization (Weick, 1995), sensemaking has been studied by several scholars in a variety of fields, above all, organizational studies (e.g., Gioia, Patvardhan, Hamilton, & Corley, 2013; Gioia, Thomas, Clark, & Chittipeddi, 1994; Liu & Maitlis, 2014; Maitlis, Vogus, & Lawrence, 2013).

Hence, a series of focused and general reviews have been subsequently produced. Among the focused ones, Helms Mills, Thurlow, and Mills (2010) were interested in analyzing a set of empirical papers on sensemaking to operationalize it; while doing that, they brought to light the main role of powerful actors in the organization who – despite themselves constrained by metarules and formative contexts – set the direction for the rules to be applied by others to understand their meaning and to build their own identities. Yet, Holt and Cornelissen (2014), through their critical review (grounded in the spirit of Heideggerian phenomenology) of Weick (1993) and related studies, propose that the ongoing organization of instrumental means that occur through breakdowns in well established cognitive patterns (Weick, 1993) is just *one way* through which sense emerge. In this regard, they emphasize how sensemaking may also be elicited from: *a*) the awareness

of what is absent or concealed, *b*) ruptures to habit experienced through mood, and *c*) exposure to open, unknowable awareness of future possibility. In contrast to the prior ones, the contributions by Maitlis and Christianson (2014) and Sandberg and Tsoukas (2015) generally reviewed the sensemaking stream of studies. In particular, both studies arrived at the shared conclusion that external and identity threats trigger the sensemaking process (Sandberg and Tsoukas also speak about *minor* events as triggers) – conceived by them as a cognitive and emotional process influenced by the social and contextual environment in which it happens. Yet, they highlight the importance of hierarchy in leading, mainly through discourses, organizational sensemaking that is at the basis of organizational learning (Abatecola et al., 2018), creativity, and strategic practices (Cristofaro, Leoni, & Giardino, 2021); either when the sense is restored or when it is not restored.

Despite the light greatly shed by reported reviews, they have abstained from providing a *comprehensive update* of the original Weickian sensemaking model (in terms of features and phases) – leaving the breadth and validity of the entire framework unexplored and bypassed – reconsidering sensemaking according to the general basis on which the model was intentionally built, i.e., Darwinian Variation-Selection-Retention (VSR) principles (refer Weick, Sutcliffe, & Obstfeld, 2005). Thus, this study tries to answer the following research questions:

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“How has organizational sensemaking perspective generally evolved? What insights can emerge from an updated evolutionary read of organizational sensemaking?”

To answer these research questions, a Systematic Literature Review (SLR) of 402 contributions on organizational sensemaking has been conducted. Sample sensemaking contributions have been reviewed according to a co-evolutionary standpoint. Adopting the co-evolutionary lens is in accordance with the call of [Maitlis and Christianson \(2014\)](#) in: i) “applying new approaches” (p. 107) to better examine the dynamic relationship between noticing cues, creating plausible explanations, and taking action to test those explanations, and ii) to fill the lack of complete understanding of how sensemaking evolves through multiple and different interacting levels. In particular, co-evolution helps to view the firm-environment relationship as dialectical rather than deterministic ([Abatecola, 2014](#)); thus substantiating an organization as part of the social world that is always in a state of becoming, owing to its relationships with sectors and society. Apart from having been already successfully used for shedding light on sensemaking related phenomena, e.g., interpretation and anticipation of a firm’s future ([Breslin, 2011](#)), it greatly helps to explain multi-level phenomena ([Abatecola, Belussi, Breslin, & Filatotchev, 2016](#); [Abatecola & Cristofaro, 2020](#)).

The analysis of the 402 studies enriches the original framework ([Weick, 2005](#)) by four new properties while another two were revisited. Apart from this critical review of original sensemaking properties allowed by the inclusive adopted criteria, the implemented co-evolutionary lens granted the development of analogies between the biological and management domains – a formal strategy used for theorizing from reviews ([Breslin & Gatrell, 2020](#)) – leading to a *co-evolutionary framework of organizational sensemaking*. The proposed model better explains the individual sensemaking process – considering both the enactment and interpretation phases – and its scale up to the collective; yet, this framework places the concept of *emotional schemata* at the center of sensemaking studies because of the pervasive role of affective states in determining cognition. These advancements answer the call of [Sandberg and Tsoukas \(2015\)](#); for whom there is a need for sensemaking studies to focus more specifically on “the creation process and the enactment process” and on “the use of the senses, namely on how the experience of a disrupted activity is shaped by the bodily senses” (p. S21) – According to [Maitlis and Christianson \(2014\)](#), this last point is connected with the veiled role played by emotions in sensemaking.

Finally, because of this co-evolutionary interpretation, a comprehensive view of the elements is provided, to the internal and external change agents, to consider establishing a new sense of events and eliminating the old ones ([Waddock, 2019](#)). This would be beneficial for changing management practices within and among organizations.

2. Weick’s sensemaking: conceptualization and historical developments

Weick originally focused his attention on the concept of *enactment*: the “mental activity that individuals activate to interpret the ongoing and chaotic environment” ([Weick, 1979](#), p. 112). The product of this activity is the so-called *enacted environment* ([Weick, 1988](#)), which contains unquestionably real objects whose meaning is, however, subject to multiple interpretations. To organize the reasoning, the developments by Weick are explained in terms of phases (ecological change, enactment, selection, and retention) and properties by which sensemaking occurs; all of them are synthesized in [Fig. 1](#).

The sensemaking process was originally conceived as starting from the appearance of *chaotic situations* ([Weick, 1988](#)); situations that happen because of the *ecology of life*, whose meanings are not given. In other words, chaotic situations are *trigger events* that form the source of raw materials for the sensemaking process. However, Weick later specified that sensemaking occurs not only because of grandiose

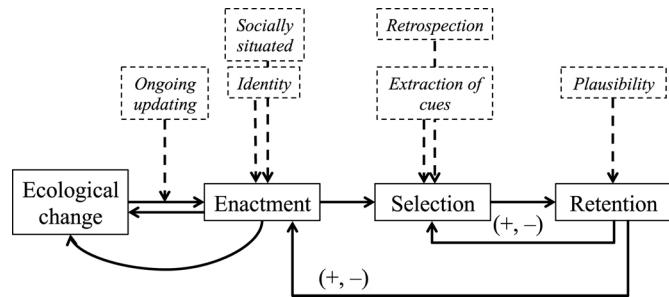


Fig. 1. Weick’s sensemaking model.

Source: Adapted from [Weick \(1979](#)

p. 132; [Weick et al., 2005](#), p. 414, p. 414)

Note: The *identity* property has been intentionally shifted from the retention to the enactment phase due to the convergence, within the latter, of the retention and ecological change outputs, as well as the one of the socially situated properties. This follows the reasoning of [Weick et al. \(2005\)](#) themselves for whom: “From the perspective of sensemaking, who we think we are (identity) as organizational actors shapes what we enact and how we interpret, which affects what outsiders think we are (image) and how they treat us, which stabilizes or destabilizes our identity” (p. 416).

situations, but also simply when the “current state of the world is perceived to be different from the expected state of the world” ([Weick et al., 2005](#), p. 409). In particular, triggers highlight the occurrence of a discrepancy eliciting an emotion that works as a stimulus for attention and drives sensemaking, recalling congruent (emotional) events ([Weick, 1995](#)).

When facing triggering circumstances, individuals start the so-called *enactment* activity that consists of: i) filtering the sets of cues on which sensemaking initially acts, i.e., “bracketing”, and ii) extracting new cues from the ongoing situation, i.e., “acting” (Weick highly emphasized the link between enactment and *action* only from 1988). However, [Weick et al. \(2005\)](#) differently defined the enactment activity as divided into “noticing” and “bracketing”, with the former underlining the use of mental models – i.e., thought processes about how things work in the outer world – by which people notice discrepancies. As a consequence of these two, people in organizations create many of their own bracketed environments that are representations of reality ([Weick et al., 2005](#)).

Because of the described mental activities required within the enactment, a pivotal role is covered by the *identity* of the organizational agent. In particular, identity incorporating the set of attributes, experiences, beliefs, and mental models of the organizational agent and the influences coming from contact with others, affects sensemaking and vice versa. This happens because the sensemaking process is carried out in relation to an environment with which it co-evolves ([Weick, 1979, 1988](#)); individual/s and the environment are both object and subject that undergo continual redefinition ([Weick, 1995](#)), thus moving towards a reciprocal *ongoing update*. However, mental models are not driven only by the individual identity and action, but are also *socially constructed*: the organizational agent’s reality is built *prima facie* by him/herself; subsequently, it is bargained with other people within and outside the organization ([Weick, 2005](#)).

Hence, mental models are not only used for defining the environment, but also to “label”, i.e. categorize existing and new extracted cues and inserting them in a schemata that highlight relationships. Labeling, however, is not a static activity. The categorization of cues occurs “in ways that suggest plausible acts of managing, coordinating, and distributing” ([Weick et al., 2005](#), p. 411).

Choosing and implementing mental models that can reduce the equivocality of situations and discard elements that add to the equivocality comprise the so-called *selection* phase (originally formed by “bracketing” and “acting”; [Weick, 1995](#)), whose aim is to reduce the ambiguity through building a schema that confirms preconceptions ([Weick et al., 2005](#)). This is facilitated by the implementation of a

historicizing approach; the organizational agent adopts a *retrospective analysis of the courses of action* (Weick, 1995), which in practice connect the present built meaning with the past event/s that have been brought to it, to support the constructed reasoning. Therefore, this activity is oriented to find consistencies; thus a *plausibility* of the story over time (or *narrative rationality*) that has been built in light of what occurred and been interpreted (Weick et al., 2005). Plausibility (and not accuracy!), in practice, is the main criterion used for the *selective retention* of a schema (Weick, 1979). The retained stories, therefore, affect both the selection and enactment phases, because the causal relationships among cues, which can explain the discrepancy, may reinforce (+) or not (–) the future way in which individuals collect cues and/or the mental models applied for enacting the situations and building meaning through schemata (Weick et al., 2005).

3. Evolutionary approaches: Generalized Darwinism and Co-evolution

Different approaches have flourished within organizational evolution studies. *Generalized* (or *Universal*) *Darwinism* (GD) – or *evolution (stricto sensu)* –, *memetics*, and *co-evolution* are among them (Abatecola, 2014).

3.1. The Generalized Darwinism view

GD scholars base their approach on two biological elements: VSR principles and the replicators-interactors mechanisms, which try to fully transfer – at a sufficiently abstract level of analysis (Hull, 1988) – to the social domain. Considering Hull (1988), these principles have subsequently been transferred to the social domain as follows: *i*) blind variation, i.e., mutations and recombinations are random and not foreseeable, and act on present routines, competencies, and/or business practices (i.e., genotypes), *ii*) selection of the variety of configurations produced by variation (i.e., phenotypes) that according to the *fitness* rule determines the probability a variation will survive or reproduce, and *iii*) retention of selected variations (Hodgson & Knudsen, 2010).

Besides the VSR principles, the GD approach is also based on the replicators-interactors mechanisms. Replicators (abstracted from genotypes; Hull, 1988) are units that are transferred to other subjects (e.g., individuals, groups, organizations) through a series of subsequent replications. Interactors (abstracted from phenotypes; Hull, 1988) are instead, the entities that interact with their environment; owing to the infinite facets that the playing forces can display, such an interaction causes differential replications (Adinolfi, 2021; Breslin, 2011; Cristofaro, 2019, 2020a).

Besides this general definition, an important debate occurred among evolutionary scholars on which elements should be considered as replicators and interactors in organizations. In this regard, while discussing the different operationalization of replicators and interactors that have been introduced, Breslin (2016) highlighted that evolutionary scholars interested in organizational adaptation share at least two main approaches: the entity and the practice view. According to the former, replicators are investigated in terms of ideas, routine as capability, and repository of knowledge; while interactors are considered in terms of technological artifacts, organizations, and organizational performance. In this case, the evolution of units is determined by external selection forces. According to the practice view, replicators are investigated in terms of abstracted cognitive structures and cognitive understandings, i.e., forms of schemata, while interactors are considered in terms of behaviors, socially situated practices, language, and narratives (Breslin, 2016). In this case, units of analysis are enacted by individuals, groups, and organizations, and continually modified through actions. Accordingly, the interaction occurs through the enacted behavior of entities which, considering their relationships with the external world, result in the differential replication of the meaning.

According to Hull's (1988) standpoint, replication and interaction

functions can be sometimes played by the same entity. This interpretation can be read in the light of the study by Breslin and Jones (2012), who recognized difficulties in separating the knowledge component of the evolutionary element and the specific activity by which it is played out. Considering the socially constructed concept of the organization, the transfer of the knowledge component occurs by involving others in the activity/task, and the transfer itself is based on communication and the use of a shared language.

3.2. The memetics view

Some renowned evolutionary scholars (e.g., Dawkins, 1982) identify memes – the ‘unit of culture’ (e.g., idea, pattern of behavior) constructed from information that is present in the minds of people – as the replicators for cultural evolution. In this aspect, Speel (1998) advanced that a meme takes the twofold role of replicator and interactor. According to him, at the individual level, the organizational agent judges in his mind “whether A or B is better, true, more important, or something equal to such criteria” (Speel, 1998, p. 1439); memes are therefore tested within the mind of the holder (so-called ‘internal selection’), and also through the comparison with other memes.

Because of their nature, memes can take the form of associative networks, exemplars, distributed representations, and *schemata*; the last one being the most studied in management and organizational studies (Schlaile & Ehrenberger, 2016). In particular, a *schema*, the plural of which is *schemata*, has been conceived by the highly cited study of Rumelhart (1980) as “the network of interrelations that is believed to normally hold among the constituents of the concept in question [...] That is, in as much a schema underlying a concept stored in memory corresponds to the meaning of that concept, meanings are encoded in terms of typical or normal situations or events that instantiate that concept” (p. 34).

In sum, the evolution of schemata through processes of variations, selection, and retention within and among individuals is at the basis of organizational evolution, as it determines its written and unwritten rules, accepted behavior, culture, policies, strategies, and more in general, survival and success. Similarly, some other scholars have defined the ‘business conception’ (a type of schemata) as the firm replicator – an element that suffers from permanent variation, meant as direct feedback from the development it forwards; substantiating an overlap with the conception of interactors (Cordes, 2006). This assumed standpoint (so-called *continuity view*), based on the overlap among replicators and interactors, and mainly descending from works on memetics, is closer (in respect to the others) to the co-evolutionary approach.

3.3. The co-evolutionary view

Co-evolution takes into account that the reality faced by firms is not objectively existent, but is enacted by organizations’ members (Abatecola, 2014; et al., 2016; et al., 2020). In practice, they consider the human intentionality of firms (through the investigation of their top decisionmakers) as determining organizational adaptation. This broader view of the firm-environment relationship, as dialectical, highlights the first assumption of co-evolution: *thinking in circles* (Weick, 1979), meaning that the relationship between people and their physical and/or social environment is circular – the enactment of reality conditions the evolving behavior. The second assumption of co-evolution is the *interdependence and reciprocal feedback* between the different entities; entities dependent on the exchange of outputs. The third assumption of co-evolution is the *multi-level logic* (Abatecola, 2014; Abatecola et al., 2016), meant as the influences involving different levels of analysis that may be formed by different entities such as *i*) macrolevel (between organizations and their external environment), *ii*) mesolevel (between sector and firm), and *iii*) microlevel (between members of the organization and between intraorganizational resources and capabilities; i.e., micro co-evolution).

It is worth noting that GD principles and phases are not in contrast to co-evolutionary assumptions; on the contrary, their cumulative consideration leads to a keener explanation of management phenomena (Cristofaro, 2019, 2020a).

4. Methodology

If a topic has been extensively studied, “researchers can use prior literature to identify critical independent, dependent, and control variables and to explain general mechanisms underlying the phenomenon” (Edmondson & McManus, 2007, p. 1159). In accordance with this, a

Table 1

A sample of the dataset.

#	Author/s	Year	Type of article	Setting	Methods	Analysis methods	Main findings	New or renewed property/explained assumption
1	Whiteman, G., & Cooper, J. B.	2011	Empirical qualitative	Three case studies (villages of Nemaska and Eastmain, and Freddy Jolly's trapline)	Participant observation and interviews, and document analysis	Thematic analysis	Ecological embeddedness enables sensemaking and that inability to make sense of subtle ecological cues introduces hidden vulnerability	Context dependent
2	Gylfe, P., Franck, H., Lebaron, C., & Mantere, S.	2016	Empirical qualitative	Middle managers (undefined number) at a Finnish broadcaster	Video-based methods	New video-based analysis method composed of three steps: detailing-sequencing-patterning	Bodies become sites of cognition at individual and collective level and serve for the passage of the intended strategy from the former to the latter	Driven by affective states stimulated by body experiences
3	Scarduzio, J. A., & Tracy, S. J.	2015	Empirical qualitative	Two municipal courts. 27 judges, 23 bailiffs, and 28 other positions (e.g., lawyer, police officer, interpreter)	Participant observation, informal ethnographic interviews, and formal audio-recorded interviews	Thematic analysis	Three types of emotion cycles exist: (a) the positive complementary emotion cycle, (b) the negative compensatory emotion cycle, and (c) the negative complementary emotion cycle	Emotional contagion
4	Carrington, D. J., Combe, I. A., & Mumford, M. D.	2019	Empirical quantitative	40 permanent members of a UK based not-for-profit organization.	Face-to-face interviews	Paired sample <i>t</i> -test; calculation of distance of cognitive maps; independent samples <i>t</i> -test	Through meerings, mental models of leadership teams converge towards follower teams, and not the other way around, during the crisis.	Cognitive contagion
5	Schildt, H., Mantere, S. & Cornelissen, J.	2020	Conceptual	–	–	–	Power can be exerted in an episodic or systemic way. Are proposed two different models of how power influence sensemaking	Power directed
6	Cunliffe, A. and Coupland, C.	2012	Empirical qualitative	A documentary case taken from the filmed 2001 British and Irish Lions rugby tour of Australia	Video-based methods	Video based analysis and vignettes	Individuals try to construct sensible and plausible accounts that are responsive to the moment and to retrospective and anticipatory narratives	Future oriented retrospection
7	Christianson, M. K.	2019	Empirical quantitative	19 teams of a U.S. research and teaching hospital	Laboratory experiment	Video based analysis	More effective teams monitor and rapidly interpret cues, confirming them with others and evaluating changes over time	Extraction and update of new cues
8	Hoyte, C., Noke, H., Mosey, S., & Marlow, S.	2019	Empirical qualitative	Four entrepreneurs of different industries (fashion, food, and digital services)	Documentary evidence, naturalistic observations, two semi-structured, and longitudinal in-depth interviews	Thematic analysis	The sensemaking process from a venture idea to its formation ask entrepreneurs building a causal map of the problem they wish to address, that then it is refined through social interactions	Replicators and interactors
9	Sonenshein, S.	2010	Empirical qualitative	42 employees of A Fortune 500 retailer	Interviews, survey, documents, archival records, and participant observation	Narrative analysis; content analysis	Although managers exercise control over formal systems, employees have agency whereby they can construct different types of meanings that can alter the meaning of a change and their response to it.	Interdependence and reciprocal feedbacks
10	Stigliani, I., & Elsbach, K. D.	2018	Empirical qualitative	51 employees of two firms of the UK service design sector	Interview and archival resources	Grounded theory	First firms of an industry are involved in the co-formation of organizational and industry identities, which occur through sensemaking-sensegiving processes	Multi-level

Systematic Literature Review (SLR) has been considered as the most appropriate research design to consolidate and synthesize academic research, which is similar to other scholars (Cristofaro, 2019). According to Tranfield, Denyer, and Smart (2003), SLR, unlike traditional narrative reviews, assists in employing rigorous and reproducible evaluation methods and links future research to the questions and concerns that have been posed by past research. In this last regard, the proposed SLR aims at shedding light on how the organizational sensemaking perspective generally evolved and identifies what insights can emerge from an updated evolutionary read of organizational sensemaking.

The methodology of the SLR follows Tranfield et al. (2003). Specifically:

- 1) The databases for the identification of the studies are: a) Business Source Premier (EBSCO); b) ProQuest's ABI/Inform; c) ISI Web of Science; d) Scopus; e) PsycINFO; and f) PubMed (including MedLine);
- 2) Only peer reviewed journal articles published in English have been included to enhance the quality control. The research was not restricted to a given starting period (end period July 2020);
- 3) The substantive relevance of contributions to the theme has been ensured by selecting articles that contained at least one of the following words within titles, keywords, and/or abstracts: “sense-making”, “sense-making”, “sense making”, “making sense”, “sense-mak*”, “sense-mak*”, “sense*” (these keywords have been derived and enlarged following Sandberg & Tsoukas, 2015) – 7436 results were produced;
- 4) Only articles regarding organizations' issues have been considered by using the keywords: “organization*”, “compan*”, “manag*”, “corporat*”, “firm*”, “business*”, “enterprise*”, “venture*”, and “start-up*” (derived from Cristofaro, 2019). Duplicates from databases were eliminated at this stage considering the integration operated through reference-manager software – 3966 hits were produced;
- 5) The resulting articles were scanned by reading all the abstracts to ensure their substantive context, mainly according to their coherence with the review's aim. When there was doubt about the content regarding the inclusion/exclusion of an article, the full text was examined – 738 results were produced;
- 6) The remaining papers were read to ensure their alignment with the research objective. A total of 402 results were produced (more than double that of Sandberg & Tsoukas, 2015; comprehensively comprising 147 articles published in nine leading journals in organization and management science). The relevant amount of included studies – the highest among previously produced reviews on organizational sensemaking – underlines the importance of the *inclusivity* principle of this review (Breslin & Gatrell, 2020). Table 1 presents a portion of sample papers.

The selection at points 5 and 6 followed two out of three criteria used by Sandberg and Tsoukas (2015); in particular, studies have been included that explicitly: i) aim to contribute to the development of sensemaking (e.g. Maitlis & Christianson, 2014), and ii) apply sensemaking in their research (Cornelissen, Clarke, & Cienki, 2010). The third criterion, i.e., sensemaking studies that have had a widely acknowledged influence in organization studies, has not been implemented to ensure the inclusion of emerging sensemaking studies that have not yet reached a wide influence, but that can nurture novelty (Renwick, Breslin, & Price, 2019).

Approximately 40% (157 articles) were published after 2014 (the last year included in the most recent review on sensemaking by Sandberg & Tsoukas, 2015), highlighting scholars' recent increasing interest towards this topic.

In accordance with the suggestions of Breslin and Gatrell (2020), the analysis of the studies within the final sample was initially finalized to *critically revise* the properties and evolutionary functioning of the

original Weickian sensemaking model, as they serve as “a rough guideline for inquiry into sensemaking in the sense that they suggest what sensemaking is, how it works, and where it can fail” (Weick, 1995, p. 18).

To do that, a mixed inductive-deductive method of thematic analysis by Braun and Clarke (2006) has been implemented for the sample of articles collected. Themes have been identified according to their ‘semantic’ level, i.e., themes have been initially organized to show patterns in semantic content. In particular, contributions have been inductively coded, *in primis*, according to the already outlined properties and phases of sensemaking as depicted in its original model, and *in secundis*, to the different properties and phases that emerged after reading the selected articles. The initial codebook for the inductive phase was derived, therefore, from the Weick (1979; 1995; et al., 2005) description of phases – ecological change, enactment, selection, retention – and properties of sensemaking, thus: ongoing updating, socially situated, identity, retrospection, extraction of cues, and plausibility. Then, other themes were left free to emerge, thus: ecological sensemaking, sensemaking as an embodied process, emotional contagion, cognitive contagion, power influence, future-oriented retrospection, and update of cues.

As postulated by Braun and Clarke (2006), these themes have been chosen for their relation to the addressed research question – i.e., *how have the sensemaking concept and model evolved since its origin?* – and representation of “some levels of patterned response or meaning within the dataset” (p. 88). In particular, despite the inner flexibility given from the thematic analysis, the use of the initial codebook based on the original Weickian model and the inclusion of free emerging themes connected to them is in accordance with the suggestions about the consistency of analysis by Braun and Clarke (2006). As a result, the formed thematic categories have ‘internal homogeneity’ (i.e., inductive and deductive themes merged into new meaningfully coherent categories) and ‘external heterogeneity’ (there are clear and identifiable distinctions among the final set of themes). These themes have been then interpreted according to their latent links because of the adoption of the co-evolutionary lens.

Old and new properties have been conceptually re-linked through a co-evolutionary view, which includes: VSR principles already adopted by Weick (1979), the identification of interactors-replicators (i.e., emotional schemata), and new evolutionary assumptions (thinking in circles, interdependence, reciprocal feedback, and multilevel logic). To proceed this way, which combines biology and management assumptions (similarly to Cristofaro, 2019 and Adinolfi, 2021), it follows the *developing analogies and metaphors across domains* strategy suggested by Breslin and Gatrell (2020) for theorizing from reviews. Yet, the adoption of a novel approach (i.e., evolutionary in this case) for the investigation of organizational sensemaking is claimed by prior scholars (Maitlis & Christianson, 2014) to examine the dynamic relationship between noticing cues, creating plausible explanations, and taking action to test those explanations. Yet, an evolutionary view of this phenomenon, featured by a multilevel assumption (such as co-evolution), is required to provide an understanding of how sensemaking evolves through multiple and different interacting levels.

5. New and renowned properties of organizational sensemaking

In accordance with Breslin and Gatrell's (2020) suggestion of critically revising prior knowledge before theorizing from it, developments that occurred in organizational sensemaking have been thematically analyzed according to the properties and phases that feature this phenomenon. In particular, for the original and well accepted properties of sensemaking, i.e., ongoing updating, socially situated, identity, retrospection, extraction of cues, and plausibility, four new properties are added: i.e., *context-dependent* (now the context is read either in a material or social way), *driven by affective states stimulated by bodily experiences*, *power directed*, and *emotionally and cognitively contagious*. Yet, two other properties were revisited: retrospection is now envisioned as

future-oriented retrospection, and extraction of new cues is conceived as *extraction and update of cues*. New and revisited properties are discussed in the following sub sections.

5.1. Context-dependent

Being context-dependent is a new property that is read either in a material or social way (the latter will be better explained when considering the emotional and cognitive contagion property). According to the former, it directly comes from the stream of works on the so-called *ecological sensemaking*, defined by [Whiteman and Cooper \(2011\)](#) as: “how actors notice and bracket ecologically material cues from a stream of experience” (pp. 890–891). In practice, different aspects of material cues (e.g. vegetation color in Whiteman and Cooper's case) influence the sense made of the event and future actions on the landscape by agents. In this approach, scholars have recently contributed to the study of this new property, finding support for the importance of material cues, also with reference to technological environments. For example, [Kaplan \(2011\)](#) found that managers using PowerPoint are facilitated in negotiating the meaning in an uncertain environment, creating spaces for discussion, and making recombinations of possible ideas. What complicates the understanding of material elements in sensemaking is that they are intertwined with nonmaterial elements. While investigating volatile and uncertain situations, such as a post acquisition integration process ([Vuori, Vuori, & Huy, 2018](#)), it has been found that the generation of meaning is based on combined material (e.g., the communication means used) and nonmaterial cues (i.e., the voice of the speaker), with the former influencing the valence of the latter, in a positive or negative way. Therefore, material objects shape human interpretation and action, and this is a reciprocal process ([Bolander & Sandberg, 2013](#)).

Finally, studies highlighted that material and nonmaterial cues do not directly affect sensemaking through cognition ([Gioia et al., 1994](#)), but they are mediated by body experiences and emotions ([Brunner-Sperdin, Scholl-Grisemann, & Stokburger-Sauer, 2014](#)).

5.2. Driven by affective states stimulated by body experiences

Sensemaking has recently been strongly affirmed as an *embodied process*, thus the body is the *locus* of cognitive mechanisms and of lived experiences that holistically enable sensemaking ([de Rond, Holeman, & Howard-Grenville, 2019](#); [Van Tongeren et al., 2018](#)). Therefore, sensemaking is driven by human senses ([Cunliffe & Coupland, 2012](#)) that have a direct impact, through the activation of biochemical answers, on affective states ([Balogun et al., 2015](#)), and in turn, on conscious and unconscious cognitive mechanisms ([Maitlis & Christianson, 2014](#)). This has been demonstrated by various and recent studies, such as by [Cunha, Clegg, Rego, and Gomes \(2015\)](#), who mention that bodily processes are the first-order response in sensemaking processes, which then activate a set of emotions. In particular, regarding the role of the body in sensemaking studies, [Gherardi, Meriläinen, Strati, and Valtonen \(2013\)](#) identified three lines of inquiry: *i*) working through the senses (e.g., how bodily appearance influences work behavior through emotions), *ii*) experiencing through the senses (i.e., meaning is generated from bodily sensory perceptions that activate emotions), and *iii*) knowing through the senses (i.e., knowledge and learning derived from sensory faculties such as tactile movements).

Thus, other sensemaking studies have been focused in parallel, while defining the direct influence of the elicited affective states on sensemaking. The first work in this direction is by [Maitlis et al. \(2013\)](#), who proposed a theoretical model advancing that: *i*) low levels of positive or negative emotions do not activate sensemaking processes; *ii*) if negative and moderately intense emotions are elicited by the trigger event, decision makers put all their effort into collecting and interpreting cues. The first two points have been empirically supported by the subsequent study of [Byrne and Shepherd \(2015\)](#), while the results of [Cornelissen et al. \(2010\)](#) and [Heaphy's \(2017\)](#) studies suggest that negative

emotions block the sensemaking process; *iii*) when agents are engaged in a positive affective state, they construct a more novel, creative account of an event or issue ([Helpap & Bekmeier-Feuerhahn, 2016](#)). In contrast, when decision makers are engaged in a negative affective state, they are more accurate in the construction of meaning based on their critical analysis of cues ([George & Jones, 2001](#)); and *iv*) sensemaking processes end when the plausible story contains a set of affective states that are aligned with those felt by the decision maker, facilitating sensegiving and action ([Heaphy, 2017](#)).

However, the identified influences on sensemaking do not happen only to the individual, but also to teams. In this aspect, [Liu and Maitlis \(2014\)](#) investigated (following [Maitlis et al., 2013](#)) the emotional dynamics in top team management meetings while formulating strategy, and found that team dynamics pervaded by positive emotions activate discussions, deeper sensemaking, and greater agreement ([Vuori et al., 2018](#)). In contrast, team dynamics pervaded by positive or mixed emotions are associated with less deep sensemaking and difficulties to act as a team. Hence, it emerges that emotions influence collectives and their motivation to build the meaning of both their actions and organization. As mentioned, investigation of the social context is pivotal for understanding how organizational sensemaking is produced, especially considering how collective emotions, starting from individual ones, are built.

5.3. Emotionally and cognitively contagious

Scholars have deeply investigated the influence of social context on sensemaking, particularly in terms of *emotional and cognitive contagion*: the processes by which an individual catches the affective states/mental models of others, sometimes without being aware of it, and in turn, converges on their affective states/mental models.

Starting with emotional contagion, the first study was by [Hareli and Rafaeli \(2008\)](#), who proposed the concept of emotional cycles: “Emotion cycles evoke a process of sensemaking; members of an organization make sense of and interpret the emotions of other people which influences their own emotions and behaviors as along with the processes and outcomes of the involved organizational dyads, groups, and teams” (pp. 36–38). To explain how emotional contagion operates through cycles, [Scarduzio and Tracy \(2015\)](#) investigated the sensegiving-sensemaking processes between judges, defendants, and bailiffs within courtrooms. In particular, they found that the initiating actor (judge) provides sensegiving cues using positive/negative emotional displays, while the receiving actor (defendant) usually provides a deferential response, and the intermediary actor (bailiff) may amplify/compensate the positive/negative emotional display. If the defendant's answer to the negative emotion displayed by the judge is defiant, then the bailiff complements or amplifies the original negative emotional display of the initiating actor.

Considering the contextual limits of the discussed study, the emotional contagion emerges as cyclical and intertwined with sensegiving and sensemaking processes in which actors display and incorporate affective states. [Heaphy \(2017\)](#) deepened this insight, arguing that the emotional contagion in sensemaking and sensegiving processes can succeed in terms of developing accounts that emotionally resonate as plausible, if: *i*) actors mitigate (and not mask! [Vuori et al., 2018](#)) their emotions, or *ii*) there are other people with whom emotions can be processed, e.g., mediators ([Scarduzio & Tracy, 2015](#)).

Other studies have explained the relationships between sensemaking and cognitive contagion. For example, [Drazin, Glynn, and Kazanjian \(1999\)](#), referring to a multilevel model of creativity, identified the exchange of schemata of the reality, from different hierarchical levels, as the fuel for mindfulness processes – a form of sensemaking at the basis of creative reframing. Yet, [Hoyle, Noke, Mosey, and Marlow \(2019\)](#), through the investigation of entrepreneurial venture formation, found that sensemaking is facilitated through drawing a causal map of the problem; then, cycles of sensegiving-sensemaking are built on it to refine

the idea. Thus, it emerges that cognitive contagion (similar to emotional) occurs through sensegiving-sensemaking cycles at the center of which there is the exchange of schemata (Hahn, Preuss, Pinkse, & Figge, 2014).

However, emotional and cognitive contagion outputs are different according to the exerting agent, especially when in the presence of hierarchical structures that assign distinct powers to organizational roles.

5.4. Power directed

According to Zilber (2007), "In reconstructing reality through discourse, actors in the field take part in the redistribution of power itself" (p. 1037). Sensemaking processes are negotiations undertaken accordingly in structures that privilege some actors over others; whose accounts are imposed and accepted (Helms Mills et al., 2010). Within this stream, Mikkelsen and Wählén (2019), through a qualitative investigation of what characterizes the political processes of sensemaking about diversity management practices in a Danish retailer, investigated the relationship of power and emotions within sensemaking processes. In particular, they stated that whoever controls cultural values within the organization also influences the circulation of specific emotions; therefore, if leaders circulate a set of values (e.g., diversity) and persuade subordinates (through sensegiving) that these values elicit positive emotions, power becomes fixed and systemic, shaping the collectively enacted environment. Thus, controlling emotions and their spread (through metaphors, axioms, and stories) facilitates the ongoing reproduction of social order within organizations.

More recently, the study of Schildt, Mantere, and Cornelissen (2020) meaningfully detailed the role of power in sensemaking, focusing on cognitive contagion; specifically, they strongly differentiated episodic (deliberate coercion or influence exerted on others) from systemic power (development and reproduction of structural sources of power). The first is mainly related to studies that investigate sensegiving processes accompanied by sensebreaking procedures (Vaara & Monin, 2010) – i.e., deliberate efforts to invalidate and reject established understandings held by individuals or groups – whereas the second is mainly related to studies that investigate how identities and agency of subordinates are shaped (Abolafia, 2010).

With regard to episodic power, Schildt et al. (2020) outlined four sensegiving practices (i.e., suppressive, authoritative, inspirational, and expansive) that vary according to the aim of the sensegiver who has the power of reducing doubt (from which the first two practices derive) or inducing doubt (from which the last two practices derive). In particular, in the case of suppressive sensegiving, the sensegiver destroys meanings that challenge the desired response to a situation by discrediting, dismissing, or disregarding observations that are not consistent with the desired answer. Instead, when the authoritative sensegiving practice is implemented, the sensegiver (usually the organizational elite) allows subordinates to understand which are the desired authoritative meanings and destabilizing meanings (i.e., by portraying them as undesirable or impossible) that contradict the desired one. In case of inspirational sensegiving practices, the sensegiver episodically intervenes by inserting divergent situational framings into the sensemaking process to elicit new interpretations and responses – with the consequence of autonomously challenging present meanings. Different from the last one, when the expansive sensegiving is implemented, organizational members are provided with competing ideas that foster new reasoning and debate on which sense to assign to a situation.

Regarding systemic power, Schildt et al. (2020) argued that if leading members exert a constraining power toward others, sensemaking processes will be automatic or algorithmic (mental models and logics are already provided to interpret situations). In contrast, if others are empowered, sensemaking processes will be improvisational or reflective (tacit evaluation criteria and rationalities are provided to interpret situations). However, plausible stories can allow the organization to continue only if it maintains consistency across the levels of time.

5.5. Future-oriented retrospection

Recent advancements in sensemaking studies have questioned the validity of the original temporal configuration of the sensemaking process as retrospective (Weick, 1979; 1995; et al., 2005), thus happening in the present in light of the past. However, this excludes, *de facto*, the third level of time – the future. In this aspect, Cunliffe and Coupland (2012), through the investigation of events in a filmed documentary tour of the Lions rugby team, demonstrated that the influence of the bodily-felt experience on the narrative of sensemaking exhibits the renowned view of the temporality of this process: "sensemaking is temporal in at least two ways: in the moment of performance we draw on past experiences, present interactions, and future anticipations, and second, we plot narrative coherence across time" (Cunliffe & Coupland, 2012, p. 83).

As mentioned, sensemaking is now identified as not only affecting the present in light of the past, but also as a future-oriented retrospective process by which people trace an expected future event – and then put some actions into practice as if that event has already occurred – to build a plausible story that connects all the three levels of time and the different identities (owing to tracking at multiple points in time) of interacting subjects (Gioia et al., 1994). This direction was subsequently explored by Cagnin (2018), who proposed an empirical model postulating that storytelling of results during meetings allows for experimenting in various stages of the future learning process, with different kinds of imaginative processes (e.g., inventing new hypotheses, variables, and models).

Therefore, sensemaking assumes a strong ongoing view and becomes temporally indivisible (Introna, 2019), being considered now as the output of the interplay between prospective and retrospective aspects (Konlechner, Latzke, Güttel, & Höfferer, 2019) that escape the classical linear modality of time. However, how these stories change over time is also dependent on the changing raw materials that are used to build them, i.e., the cues extracted during the sensemaking process.

5.6. Extraction and update of cues

Recent studies initiated by the insights provided by the simulated elaboration of Rudolph, Morrison, and Carroll (2009), found that sensemakers are involved – within the selection phase of the sensemaking model – in the extraction and update of cues (Christianson, Farkas, Sutcliffe, & Weick, 2009). The logic at the basis of this activity is that the update of cues is necessary to reinforce the initial preconceptions of the sensemakers and related mental models, helping to build plausible stories that can support the organization to continue over time (Sonenschein, 2010). On that subject, it has been stated that assessing new cues on time and updating the set of cues are necessary to effectively conduct sensemaking processes. However, being too rapid or too slow in this update may not be beneficial (Rudolph, Morrison, & Carroll, 2009).

The exposed renewed property has been confirmed over time by other studies, such as that of Patriotta and Gruber (2015) (later supported by Christianson, 2019) who explained how workers in the news department of a local U.S. television station planned their stories daily and adjusted plans when new stories arrived. In their case, incoming news interfered with the order of the planned organization that called for an updated plan according to the relevance of the news. In contrast, and always supporting the renewal of the discussed property, not updating cues in sensemaking (but also sensegiving) processes usually brings contradictions between emerging perspectives, undermining strategic organizational initiatives resulting in crises (Maitlis & Sonenschein, 2010).

6. The co-evolutionary model of organizational sensemaking

Developments that occur in organizational sensemaking, reported

within the prior section, highlight *multiple levels* of sensemaking *bi-directional influences* that can be summarized into: *i*) organizational level (including horizontal and hierarchical influences and those from organization to members and vice versa), and *ii*) supra-organizational level (e.g. bidirectional influences to and from industry, and country). The introduced co-evolutionary assumptions (i.e., multilevel, interdependence, and reciprocal feedback) are closely connected with the original Weickian (and also co-evolutionary) assumption of *thinking in circles*, which advanced that the meaning built within the individual/collective sensemaking process influences the sensemaking processes at the organizational and supra-organizational levels.

These updates substantiate co-evolutionary assumptions that together with the identification of interactors-replicators and the maintenance of VSR principles (already present in Weick, 1979), provide the basis for *developing analogies and metaphors* (across biology and management) that helps to theorize from reviews (Breslin & Gatrell, 2020). The conceptual advancement produced is the proposition of a *co-evolutionary model of organizational sensemaking*. The model, shown in Fig. 2, is detailed in the following subsections and its explanation is supported by the use of the sensemaking literature produced.

6.1. From enactment to meaning retention in individual sensemaking

Firstly, following the *multilevel property of co-evolution*, the construction of meaning by people within the organization is influenced by other influencing levels: the organization itself and its organizational environment (sectorial and general) (A₁), occurring through their culture and identity (Prior, Keränen, & Koskela, 2018). For example, it has

been recently found that the culture of the organization centered on the values of collaboration and experimentation can serve as a means for defining the members through the adoption of design thinking tools for the sensemaking process (Elsbach & Stigliani, 2018). With regard to the influence of the supra-organizational environment, it has been found that managers with western cultural roots conceptualize business networking as part of their long-term organizational strategy and business partners are sensed as organizations rather than individuals, while managers with eastern cultural roots emphasize the process of engagement in personal relationships and personalize their business partners at an individual level (Ivanova-Gongne & Torkkeli, 2018). Accordingly, organizational sensemakers are influenced by the “cultural scripts” emerging from the accepted and appropriate behaviors and patterns of interaction coming from their own country’s cultural values and history (Ivanova-Gongne & Törnroos, 2017). Yet, organizational sensemakers are also influenced by industry identity, which emerges as a *simultaneous co-formation process* of work practices with the organizational one (Stigliani & Elsbach, 2018) executed through sensegiving-sensemaking cycles (A₂). In particular, these work practices are usually allowed by the agents that are part of the organization and the industry, to be wide in their definition to permit the adaptation of organizations’ work practices without necessarily modifying the identity of the industry (Gioia, Schultz, & Corley, 2000; Nigam & Ocasio, 2010). Thus, industries are enacted when groups of actors participate in activities that create certain sets of meaning, which can be driven by an initial industry sensegiving; this result has been reinforced by a series of other studies (e.g. Gioia et al., 2013). As a consequence of this conception of the environment as dynamic and driven by co-formation processes, a continual redefinition

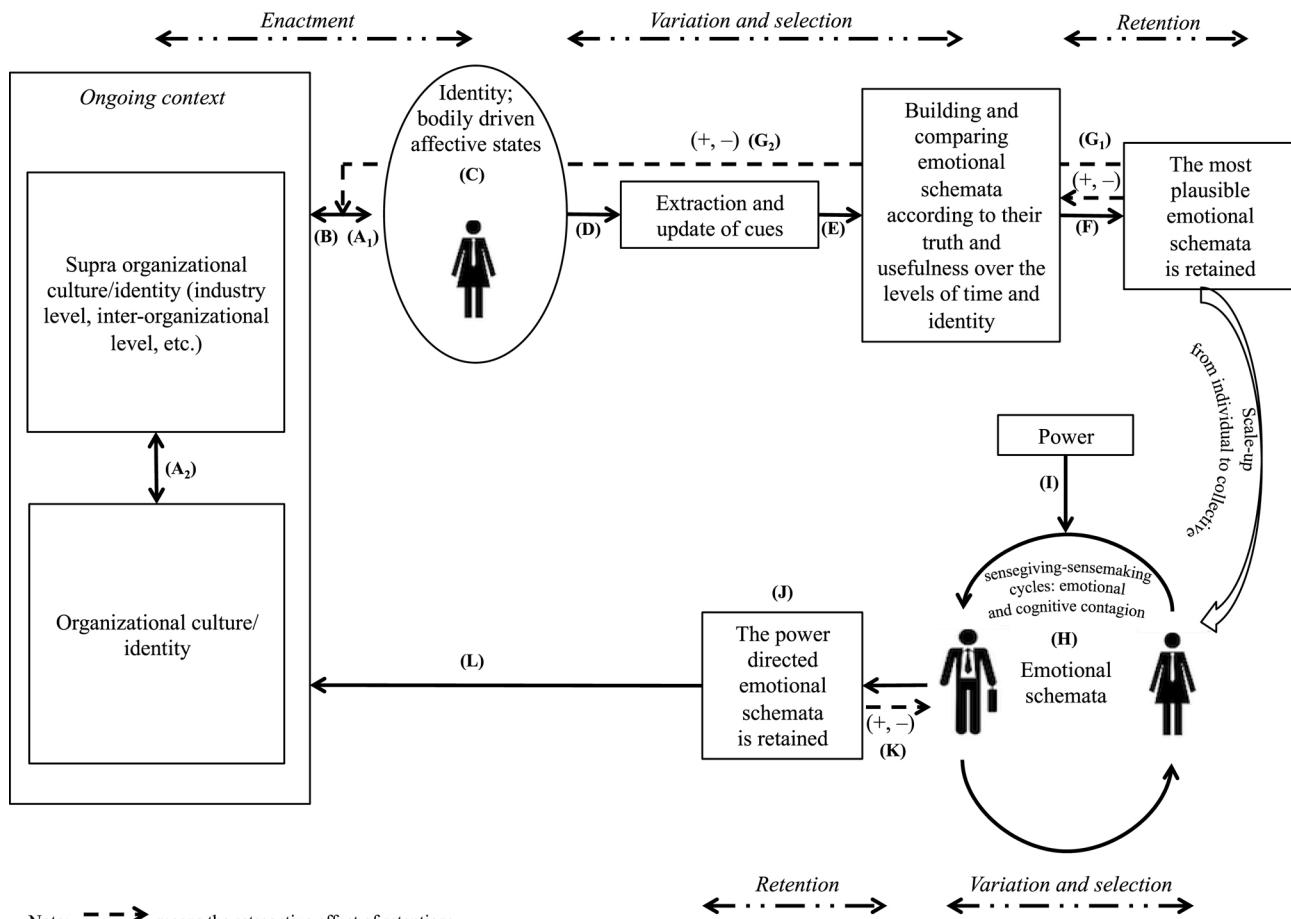


Fig. 2. The co-evolutionary model of organizational sensemaking.
Source: own elaboration.

by organizational members with enactment activity is requested (Weick et al., 2005) (B).

In particular, the enactment activity starts when a difference between the state of the world from that expected is recognized (Weick et al., 2005); or also in cases when the awareness of something absent or concealed emerges, ruptures to habit experienced through mood, and exposure to open, unknowable awareness of future possibility (Holt & Cornelissen, 2014). The highlighted discrepancy is bodily felt by the sensemaker, with the consequence of eliciting a set of emotional responses (Weick, 1995; Balogun et al., 2015) whose valence depends on the material and nonmaterial context in which this discrepancy occurred (Whiteman & Cooper, 2011). These emotions and the identity of the sensemaker (Weick, 1979, 1988) drive how the environment is noticed and the mental models are initially applied to these raw data (C). In brief, when modifying or building the meaning, the sensemaker discounts past sensegiving influences – arriving from the supra-organizational environment, the organizational environment, and others – within the enactment phase, which are comprehensive of influences coming from the material context, affective states, and identity around the sensemaker. Thus, also in cases when referring to sensemaking processes for an individual, the sensemaker is not a ‘pure creator’, but part of the meaning has been already given and incorporated in the identity (Ran & Golden, 2011). In practice, the influences derived from the ecological change (Weick, 1979), including the organization and the influence of others within the organization, enter the sensemaking process of the individual within the enactment phase.

The enactment phase embodies “noticing” and “bracketing” the environment; to make sense, the agent acts driven by his affective states, to extract new cues and contemporaneously validates them, through their update, using initial mental models (Weick et al., 2005). This phase has been recently well explained by Cristofaro (2020a; 2021) and his *Affective-Cognitive Theory* of management decisions: when sensemakers feel a predominantly positive, mixed, or negative affective state, they are driven to collect and interpret, respectively, confirming cues (with respect to the initial mental model), too many or less cues, confirming and disconfirming cues. According to the foregoing, when the organizational agent has extracted and updated cues, the formation of meaning has not yet been performed; the cues are only genuine information (Schlaile & Ehrenberger, 2016). These are then assembled by the sensemaker to form a schema (Weick et al., 2005); however, as described earlier, schemata are mainly shaped by the elicited affective states, and as a consequence of this deep influence of affective states in the connotation of schemata, they are conceived here as *emotional schemata* – a concept initially advanced by some social psychologists (Gawda & Szepietowska, 2013), but still not recognized in management and organization research.

Once the emotional schema is formed within the individual, it should then pass the ‘internal selection’ of the sensemaker – to judge whether the built emotional schema is more accurate than others (Speel, 1998). So, from the comparison of the varied emotional schemata – whose content is also influenced by the narratives, language, or other kinds of interactors that carry these representations (the replicators-interactors mechanism is explained in the following subsection) – one is selected that has more plausibility than others, because it can solve the existing discrepancy. Moreover, the selection criterion of plausibility takes into account the reliability of the emotional schema across all the time levels, the related identities of the sensemaker (Cagnin, 2018; Introna, 2019), and his/her affective state (E) (Maitlis et al., 2013). In this aspect, Cristofaro (2020a), starting from prior sensemaking studies (Heaphy, 2017; Liu & Maitlis, 2014; Maitlis et al., 2013), postulated that it is usually selected and retained: a novel and favorable plausible account of the situation when positive affective states are predominant; an accurate and unfavorable plausible account of the situation when negative affective states are predominant; too many or no plausible account of the situation when mixed affective states are predominant. In practice, the emotional schema that fits this selection criterion substantiates the

meaning that is retained (F).

Finally, as postulated by Weick et al. (2005), the retained story influences both the selection (G₁) and enactment (G₂) phases; reinforcing (+) or not (–) the future way in which individuals collect cues and carry out the building of emotional schemata. These stories, therefore, act as feedback for the organization and supra-organization sensemaking processes, in accordance with the *thinking in circles principle* (also included in Weick, 1979) and *interdependence and reciprocal feedback* co-evolutionary assumptions (Cristofaro, 2020a).

6.2. From individual sensemaking to collective sensemaking

The escalation from the individual to collective sensemaking happens through sensemaking-sensegiving cycles (Ran & Golden, 2011), which substantiate the assumed interdependence among entities through the exchange of reciprocal feedbacks. In particular, here the position is taken that these cycles – which are not strictly sequential but may occur simultaneously to facilitate adaptation (supporting the co-evolutionary logic even more) (Gioia & Chittipeddi, 1991; Scarduzio & Tracy, 2015) – are based on the emotional and cognitive contagion among organizational agents and that this relationship is moderated by the power exerted (or not) by sensegivers (H). Hence, influences coming from the ecological change and from others – that already discounted past influences in terms of culture, identity, affective states, and cognition of their supra-organizational environment and organizational environment – also ‘directly’ enter, through sensegiving-sensemaking cycles, the variation and selection processes. It is worth noticing that even if Fig. 2 shows a dyad, the depicted contagious mechanisms work despite the number of people involved – in accordance with Hareli and Rafaeli (2008).

Regarding the general functioning of sensegiving-sensemaking cycles – whose underlying emotional and cognitive contagion is explained later – it is assumed that a sensemaker (e.g., a leader) initially makes sense of a situation and it is then passed to others (e.g. employees) through sensegiving (Kraft, Sparr, & Peus, 2015). However, organizational members engaged in sensemaking processes from sensegivers are not simply passive recipients of emotional schemata of others, but who activate their own sensemaking with the consequence of adopting, or not, the sense they have been given and influencing the hierarchy (Sonenschein, 2010); then, the hierarchy may, or may not, adapt to the emotional schemata of the others (Carrington, Combe, & Mumford, 2019). The depicted functioning is based on the studies by Gioia and Chittipeddi (1991) and Gioia et al. (1994), who originally discovered that top managers are not only involved in sensemaking activities concerning the external environment to formulate strategies, but also in influencing others’ meaning constructions through sensegiving. Despite that, sometimes, the passage of feedback through sensegiving processes may not occur directly from top managers to employees, but is mediated by middle managers. In practice, top managers leave middle managers free to construct their own meanings of change through their sensemaking activity; this has the consequence of giving a sense of change to employees, which can diverge from that originally intended by top managers (Balogun et al., 2015). This substantiates, *de facto*, a multilevel influence on sensemaking within the organization.

To clarify how the emotional and cognitive contagion occurs in sensegiving-sensemaking cycles according to a co-evolutionary logic, the replicators and interactors of this process and how they interact are explained. First, it is worth noticing that affective states – that form ‘a part’ of the replicators called emotional schemata – were already considered by Cristofaro (2019) as replicators within organizational processes following a co-evolutionary logic; also pointing out that they are at the basis of the development of cognitive accounts over the different interacting organizational levels. These emotional schemata are enacted by organizational agents and the interaction among their behaviors [or narratives (see Abolafia, 2010; Cornelissen et al., 2010; Gioia et al., 1994; Keller & Sadler-Smith, 2019; Maitlis & Sonenschein,

2010; Zilber, 2007), or human bodies (Gylfe, Franck, Lebaron, & Mancini, 2016), or design thinking tools (Elsbach & Stigliani, 2018), or socially situated practices (in line with Weick, 1979; 1995)] that results in their different replication. In other words, emotional schemata are conceived as the Darwinian replicators that are “expressed to ‘others’ through [...] interactors [...] and result in the transfer of information between individuals” (Dobson, Breslin, Suckley, Barton, & Rodriguez, 2013, p. 73). The proposed account of emotional schemata as replicators and the account of behaviors, narratives, and other means for carrying the replicator as interactors follow the *practice view* of replicators-interactors within co-evolutionary studies (Breslin, 2016), which include scholars of the continuity hypothesis (Cordes, 2006) and memetics (Dawkins, 1982; Schlaile & Ehrenberger, 2016), identically postulate that informational or cognitive representations are mutually constituted through manifesting behaviors and narratives. This duality relationship between replicators and interactors has also received recent biological support (Tang, 2017).

In sum, what is varied and selected over sensegiving-sensemaking cycles are emotional schemata that evolve through their relationships and among underlying interactors (Dobson et al., 2013), in accordance with their mutual constitution.

From what has been said about the definition of emotional schemata and interactors, it is shown that the emotional and cognitive contagion of sensegiving-sensemaking cycles do not operate in parallel, but they are strongly interconnected; affective states influence the schemata of the individual, forming emotional schemata, and these affect the emotional schemata of counterparts and vice versa. This functioning can be derived from some studies within the organizational sensemaking literature (Hahn et al., 2014; Heaphy, 2017; Hoyte et al., 2019). In particular, they argued that the emotional state felt by the individual sensemaker activates, through the reinforcement of the initial mental frame invoked, a collective emotional contagion that is carried into shared emotions and presumptions are used as a basis for inferences. The connection between emotions and cognition derives from the activation of a “mental anchoring attitude” oriented to find connections between what is felt and what is thought. Yet, Cristofaro (2020a) recently explained the link between emotional and cognitive contagion in collective sensemaking better, as already reported, in terms of its functioning and outputs, for the individual sensemaking process in the previous subsection; when passing from the individual to the collective case, the predominant affective states that drive the collection of cues and the formation of a plausible account of the situation come from the interactions of those of the individuals (H).

However, Cristofaro (2020a) did not consider the role of power in sensemaking that has been found pivotal in directing the output of sensegiving-sensemaking cycles, and that may select emotional schemata, as a final meaning, which could have not been the predominant one if the interactions had been free of power influence. Kraft et al. (2015) very capably considered the role of power within sensegiving-sensemaking cycles; in particular, according to their model: *i*) leaders are more likely to use direct/indirect, unilateral/multilateral sensegiving strategies if their level of legitimate power is high/low; *ii*) leaders are more likely to use abstract/concrete, positive/negative and normative/rational language if their level of legitimate power is high/low; *iii*) leader sensegiving is more likely to trigger an alteration/emergence of existing/new schemata in employee sensemaking if it shows high/low consistency with existing schemata of the organization; and *iv*) leader sensegiving is more likely to trigger an alteration/emergence of existing/new schemata in employee sensemaking if employees experience positive/negative emotions during sense-receiving. Apart from these authors, Schildt et al. (2020) recently detailed four sensegiving practices oriented by power. Two of them (suppressive and authoritative sensegiving) describe situations in which leaders exert a constraining power toward others and push their sensemaking processes to be based on automatic responses or specific narratives (schemata are provided); leaders, in practice, question the

established understandings that contradict the intended ones because it is undesirable and replace them. The other two practices (inspirational and expansive sensegiving) shape the building of meaning of sensemakers by the (neither suppressive nor authoritative) introduction of divergent schemata. In sum, sensegiving-sensemaking cycles’ outputs within organizations are moderated by the exerted power (or not) of sensegivers (I), in accordance with evolutionary studies highlighting that the win of one schemata over the others mainly depends on the power of the holders in defending it, highlighting its truth and usefulness (Speel, 1998). From what has been stated above, the retained meaning in collective sensemaking, therefore, is the *power directed meaning* of the prevailing identity (Alvesson & Willmott, 2002) considering the different levels of time (J), which does not always mean one of the leaders (Beck & Plowman, 2009) or the one not welcomed by subordinates (Bean & Hamilton, 2006).

The final meaning assigned to a situation is the product of sensegiving-sensemaking dialectical processes – to which this model gives a strong theoretical basis – that advance the twofold role of sensemaking as the object and subject of evolutionary processes (as postulated by co-evolutionary scholars; Abatecola, 2014; Breslin, 2016). Accordingly and as advanced for the individual sensemaking process, the retained meaning influences the selection phase (K), reinforcing (+) or not (–) the future way in which individuals collect cues and carry out the building of emotional schemata (Weick et al., 2005), along with values, norms, and assumptions of organizational culture and identity (L) – as found by Elsbach and Stigliani (2018) with regard to the use of some particular design thinking tools (e.g., prototyping) that can develop an organizational culture based on experimentation and learning from failure.

7. Conclusions

Through an SLR of 402 contributions on organizational sensemaking, this study proposes an updated and holistic revisit of the original sensemaking model according to a co-evolutionary lens.

In particular, four new properties have been detected and two have been revisited by updating the original Weickian model; moreover, a co-evolutionary account is provided of how individual organizational members make sense of situations, and how this process works in scaling up to the collective level. In particular, both processes are governed by variation-selection-retention principles that act on a specific type of replicator, i.e., emotional schemata, which are modified through the interaction of behaviors, narratives, or other types of interactors. These processes at the individual and collective levels do not work in a *vacuum*, but discount all the cultural and identity influences arising from the organizational and supra-organizational levels, to which they come back with a renowned meaning.

This study answers the call of prior reviews (Helms Mills et al., 2010; Maitlis & Christianson, 2014; Sandberg & Tsoukas, 2015) that asked for an investigation and further inclusion of some properties within the organizational sensemaking framework, i.e., power, context, embodied cognition, and clarification on the role of time in building plausible stories. Moreover, the provided co-evolutionary interpretation substantiates sensemaking and organization as phenomena that are mutually constituted because of their co-evolutionary functioning. In this perspective, the organizational context is not only the product of individual images of self and others, and one’s own activity in the context of collective interaction and learning (Weick, 1979), but it also takes into account other levels of analysis, i.e., the industry and the general environment. Three main implications emerge from this work.

First, it helps to clarify the ontological debate on how meaning is built (on the ontological and epistemological debate, see the great accounts provided by Maitlis and Christianson (2014) and Sandberg and Tsoukas (2020)). However, there are two schools of thought on the formation of meaning: *i*) that meaning is created, made by humans through their interactions with the world (e.g. Weick, 1995), and *ii*) that

meaning is already made, present in nature, and that humans only discover it (Baumeister & Landau, 2018). According to the co-evolutionary interpretation of sensemaking – that considers the individual as already discounting prior sensegiving influences, and that the escalation from the individual to the collective works on sensegiving-sensemaking cycles – these two schools are reconciled. Here, sensemaking outputs are conceived as coming from the dialectical relationship of the meaning conveyed to the sensemaker (i.e. determinism view) – the *object of sensemaking* – through the sensegiving processes, and the meaning created by the sensemaker – the *subject of sensemaking* (i.e., voluntarism view). Thus, this proposed co-evolutionary interpretation of organizational sensemaking allows the completion of prior co-evolutionary studies that identified crises as starting from Top Management Team (TMT) misperceptions of the internal and/or external environment, which consequently lead to ineffective adaptations (Abatecola, 2014). In particular, these studies provide an account of how this TMT misperception occurs, offering an interpretative framework of analysis for the study of crises (Helms Mills et al., 2010; Weick, 2010) and change (Maitlis & Sonenshein, 2010). However, the effect of the co-occurrence of multiple sensegiving-sensemaking processes at the same time for different levels of analysis has still not been investigated; the multilevel nature of the proposed framework, in practice, highlights the complexity of the sensemaking phenomena, whose validity should be holistically investigated. This introduces the following questions: *Is there a positive/negative/ambivalent effect of simultaneously experiencing different sensemaking processes at distinct levels? Does the search for meaning at one level of investigation overcome one that occurs at another level?* These questions can be answered only by the identification of measures of the sensemaking process at multiple levels to identify the co-evolutionary nature of changing meaning; this would help to raise quantitative findings in a field still full of qualitative studies. These measures are appropriate to detect the longitudinal facet of sensemaking processes because co-evolutionary phenomena are not oriented to the short term. The longitudinal orientation would also allow deepening of the within-entity (i.e., person, collective, organization, network of organizations) changes in sensemaking, to find out how and why the assignment of meaning changes over time (assuming the view of a dynamic capability). Hence, *How does the sensemaking of an entity evolve through its life-cycle?*

Second, and always with reference to the ontological debate of how meaning is built, the proposed framework helps to shed light on *where* the organizational sensemaking process happens (Maitlis & Christianson, 2014). Also in this case, schools of thought are twofold: 1) sensemaking is a process that occurs in individuals' heads, or 2) it is a process of social construction that is carried out through interaction between organizational agents (Sandberg & Tsoukas, 2015). The proposed model, as already introduced, is based on both inter-related assumptions. However, to restore/assign a sense to an event, the sensemaking process is initially carried out at the individual level – despite discounting past sensegiving influences emanating from the environment – by selecting and retaining emotional schemata that have been varied after the enactment phase. Once the meaning for the individual is built, the emotional schemata of the organizational agent may interact through sensemaking-sensegiving cycles, with the ones of others and this relationship is moderated by the power exerted (or not) by sensegivers. Thus, the organizational sensemaking process is interpreted as an interaction of individual and collective inter-connected levels that further the two schools of thought reported above and that is based on an *emotional-cognitive intertwinement*. This new ontological point of view also claims a renowned epistemology. In this regard, the measurement of emotional schemata can be carried out through the Leahy Emotional Schema Scale (LESS), a self-report measure (Leahy, 2002) recently developed in the cognitive psychology field, reflecting 14 dimensions of cognitive-emotional processing. Adopting the suggested tool will substantiate a good cross-fertilization between psychology and organization

studies and would bring huge novelty in the measurement of sensemaking, allowing its tracing at the individual and collective sensemaking during the selection and retention phases. Because of that implementation, the research could overcome epistemological problems of sensemaking processes of being too anchored on qualitative analysis methods (e.g., conversation analysis, discourse analysis, and micro-ethnography), which have the consequence of not leading to generalizable results (Holt & Christianson, 2014). The adoption of this new ontology and epistemology answers the need for future research, made by Maitlis and Christianson (2014) and Sandberg and Tsoukas (2015), who raised the opportunity of seeing the emotional qualities of sensemaking, and detailing and capturing the process of sensemaking. However, affective states pervading sensemaking can vary, and within this work, the specific emotions, mood, or temperament that drive the emotional schemata have not been identified. Other studies might be interested in determining the specific affective state that overcomes the others in directing sensemaking processes.

Third, the co-evolutionary interpretation of organizational sensemaking is centered on the concept of emotional schemata, giving relevance to the inter-relationship of affective states and cognition in forming the meaning assigned to a situation. This answers the recent call for new cognitive models that can conceive Systems 1 and 2 of the human mind (responsible, respectively, for emotional-intuitive, and reflective thinking; see (Stanovich & West, 2000), as parallel interacting functions in humans (Hodgkinson & Sadler-Smith, 2018). This helps to avoid restricting the intuitive and emotional judgment formation only to System 1; as proposed here, affective states drive the formation of schemata. This strong advancement supports the important discoveries in the study of the human brain that postulate the concurrent role of affective states and cognition in shaping sensemaking and decision-making (Okon-Singer, Hendl, Pessoa, & Shackman, 2015). This new interpretation can serve as an important platform for the explanation of decision-making processes within organizations. Indeed, stemming from the fact that making sense of the choice environment is the first step for any decision-making process (Simon, 1947), it advances the development of some recent and well developed behavioral decision theories, especially those that already embed evolutionary principles and the duality of affect and cognition (Cristofaro, 2017a), such as the *Affect-Cognitive Theory* (ACT) of Cristofaro (2020ab; 2021). Completing this recent theory of management decisions can offer a comprehensive model that is contemporarily able to explain sensemaking and decision-making processes in a structured and inter-related form. This will overcome the prejudices of Weick (1995) in including cognitive studies; he originally declared that: "from the standpoint of sensemaking, it is less productive to follow the lead of behavioral decision theorists (e.g., Kahnemann, Tversky, Thaler) who gloat over the errors, misperceptions, and irrationalities of humans, and more productive to look at the filters people invoke, why they invoke them, and what those filters include and exclude" (p. 57). This impeded integration is now possible and is mandatory since sensemaking *per se* cannot explain organizational performance; pursuing it would answer the call of behavioral strategy scholars in reconciling streams of research belonging to different paradigms ("contextualist" for sensemaking and "reductionist" for decision making; Powell, Lavello, & Fox, 2011). Because of the proposed integration, and the consideration of emotional schemata as the new unit of analysis, a series of questions could be answered, such as – *Do emotions, moods, and affective temperaments have the same influence on sensemaking processes and biases? Does the regulation of emotions eliminate the tendency to fall into confirmation bias?* In sum, the full potential of organizational sensemaking and emotional schemata still needs to be exploited and the integration with recent and well developed behavioral decision theories is, without doubt, the next step.

The main practical implication of this study lies in offering a framework for a better understanding of organizational phenomena; among which there are the ones investigated by prior empirical sensemaking literature, e.g., exacerbated organizational disasters, crises,

resistance, creation of gendered substructures, and discriminatory practices. This co-evolutionary interpretation has provided a comprehensive view of the elements to consider for establishing a new sense of events and eliminating the old ones (Waddock, 2019), to internal and external change agents; this would be beneficial for changing management practices within and among organizations. By establishing these new senses, it has helped the implementation of the so-called “nudges” (Thaler & Sunstein, 2008), defined as the indirect suggestions able to influence decision making and that have been considered as pivotal for building or changing entities’ (not only organizations) choice environments. In recovering crises, for example, organizational leaders should find plausible stories that elicit feelings from the individuals that activate an intended changing behavior (Cristofaro, 2017b); for accomplishing it, however, it is necessary to find individuals that work as ‘connectors’. These central people within the organization should sustain, with their formal or informal power, the emotional and cognitive contagion among people to convey the desired meaning. This gentle push of agents to act toward the intended behaviors would lead to general agreement on new stories and the discarding of the old ones, promoting effective adaptations and avoiding crises (Abatecola, 2012). To direct the sensemaking process, however, managers and leaders should leverage their own and employees’ emotions – in accordance with previous works highlighting the importance of emotionally intelligent leaders (Kim & Kim, 2017) – through sensegiving-sensemaking cycles. For example, if they want to change their own and employees’ attitude (Helpap & Bekmeier-Feuerhahn, 2016), they must first investigate which of the affective states are attached to the established main schemata within the organization, and then, must act to identify the affective states that are attached to schemata they want to diffuse.

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